

Appl. No. : 09/975,466
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AMENDMENTS TO THE CLAIMS

Please amend the claims as indicated below.

1. (Previously Presented) A process for producing an integrated circuit comprising reducing copper oxide on a substrate by exposure to one or more vapor phase organic reducing agents prior to deposition of a layer comprising silicon carbide, wherein the vapor phase organic reducing agent is not plasma activated.
2. (Original) The process of Claim 1, wherein the layer further comprises oxygen.
3. (Original) The process of Claim 1, wherein the layer serves as a hard mask.
4. (Original) The process of Claim 1, wherein the organic reducing agent comprises at least one functional group selected from the group consisting of alcohol (-OH), aldehyde (-CHO), and carboxylic acid (-COOH).
5. (Previously Presented)) The process of Claim 4, wherein the organic reducing agent is selected from the group consisting of primary alcohols, secondary alcohols, tertiary alcohols, polyhydroxyalcohols, cyclic alcohols, and halogenated alcohols.
6. (Currently Amended) The process of Claim 4, A process for producing an integrated circuit comprising reducing copper oxide on a substrate by exposure to one or more vapor phase organic reducing agents prior to deposition of a layer comprising silicon carbide, wherein the vapor phase organic reducing agent is not plasma activated, and wherein said organic reducing agent is selected from the group consisting of:

compounds having the general formula R³-CHO, wherein R³ is hydrogen or a linear or branched C₁-C₂₀ alkyl or alkenyl group;

compounds having the general formula OHC-R⁴-CHO, wherein R⁴ is a linear or branched C₁-C₂₀ saturated or unsaturated hydrocarbon;

a compound of the formula OHC-CHO;

halogenated aldehydes; and

other derivatives of aldehydes.

7. (Currently Amended) The process of Claim 4,A process for producing an integrated circuit comprising reducing copper oxide on a substrate by exposure to one or more vapor phase organic reducing agents prior to deposition of a layer comprising silicon carbide, wherein the vapor phase organic reducing agent is not plasma activated, and wherein the organic reducing agent is selected from the group consisting of:

Appl. No. : **09/975,466**
Filed : **October 9, 2001**

compounds of the general formula R⁵COOH, wherein R⁵ is hydrogen or a linear or branched C₁-C₂₀ alkyl or alkenyl group; polycarboxylic acids; halogenated carboxylic acids; and other derivatives of carboxylic acids.

8. (Previously Presented)) The process of Claim 1, wherein said copper oxide is present after a chemical mechanical polishing (CMP) step.

9. (Original) The process of Claim 1, wherein said copper oxide is formed by exposure to a clean room atmosphere.

10. (Original) The process of Claim 1, wherein said exposure takes place in a first reaction chamber.

11. (Original) The process of Claim 10, wherein said layer serves as an etch stop.

12. (Original) The process of Claim 11, wherein deposition of the etch stop layer also takes place in the first reaction chamber.

13. (Original) The process of Claim 11, wherein deposition of the etch stop layer takes place in a second reaction chamber clustered with the first reaction chamber.

14. (Original) The process of Claim 11, wherein the temperature in the reaction chamber is less than about 450°C.

15. (Original) The process of Claim 11, wherein the temperature in the reaction chamber is between about 200 and 430°C.

16. (Original) The process of Claim 11, wherein the temperature in the reaction chamber is about 400°C.

17. (Original) The process of Claim 11, wherein reduction of copper oxide and deposition of the etch stop are carried out in the same reaction chamber at about the same temperature.

18. - 27. (Cancelled).

28. (Previously Presented)) A process for producing an integrated circuit comprising the following steps, in order:

depositing a copper layer on a substrate;

subjecting the copper layer to a CMP process;

contacting the substrate with one or more vapor phase organic reducing agents; and

Appl. No. : **09/975,466**
Filed : **October 9, 2001**

depositing an etch stop layer on the substrate, wherein the organic reducing agents comprise at least one functional group selected from the group consisting of alcohol (-OH), aldehyde (-CHO), and carboxylic acid (-COOH),

wherein the vapor phase organic reducing agent is not plasma activated.

29. (Cancelled).

30. (Original) The process of Claim 28, wherein the etch stop layer comprises silicon carbide.

31. (Original) The process of Claim 30, wherein the etch stop layer further comprises oxygen.

32. (Original) The process of Claim 28, wherein the etch stop layer comprises silicon nitride.